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<u>L1</u>	HCV and ribavirin	1039	<u>L1</u>

END OF SEARCH HISTORY

=> ribavirin  
L1 8754 RIBAVIRIN

=> HCV (l) antigen  
L2 3710 HCV (L) ANTIGEN

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=> treatment and L3  
L4 113 TREATMENT AND L3

=> NS3 and L4  
L5 24 NS3 AND L4

=> nucleic (s) acid  
L6 229854 NUCLEIC (S) ACID

=> L6and L4  
MISSING OPERATOR L6AND L4  
The search profile that was entered contains terms or  
nested terms that are not separated by a logical operator.

=> L6 and L4  
L7 4 L6 AND L4

=> D L7 IBIB ABS 1-4

ACCESSION NUMBER: 1998:496820 BIOSIS

DOCUMENT NUMBER: PREV199800496820

TITLE: The antiviral compound **ribavirin** modulates the T  
helper (TH)1/Th2 subset balance in hepatitis B and C  
virus-specific immune responses.

AUTHOR(S): Hultgren, Catharina; Milich, David R.; Weiland, Ola;  
Sallberg, Matti [Reprint author]

CORPORATE SOURCE: Div. Clin. Virol., F68, Oral Microbiol., F88, Huddinge  
Univ. Hosp., S-141 86 Huddinge, Sweden

SOURCE: Journal of General Virology, (Oct., 1998) Vol. 79, No. 10,  
pp. 2381-2391. print.

CODEN: JGVIAI. ISSN: 0022-1317.

DOCUMENT TYPE: Article

LANGUAGE: English

ENTRY DATE: Entered STN: 18 Nov 1998

Last Updated on STN: 18 Nov 1998

AB **Ribavirin** is effective in combination therapies against chronic hepatitis C virus (HCV) infection, although its direct antiviral properties are unclear. We therefore studied the immune-modulatory effects of **ribavirin** on hepatitis B virus (HBV)- and HCV-specific immune responses. During a 24 week placebo-controlled **ribavirin** trial in ten patients with chronic HCV infection, HCV antibodies and alanine aminotransferase (ALT) levels decreased transiently whereas the serum levels of HCV RNA remained stable. Effects of **ribavirin** on human and murine phytohaemagglutinin (PHA)-activated T cells included inhibition of in vitro proliferation and modulation of IL-2, IL-4, IFN-gamma and TNF-alpha levels. HBcAg- and HBeAg-specific IL-2 and IFN-gamma levels were 25-fold higher in mice immunized with HBV core- or e-antigens (HBcAg, HBeAg) while receiving **ribavirin** compared to untreated mice, but IL-4 and IL-6 remained constant. Concordantly, a slight shift was observed in the IgG subclass distribution of the humoral responses of **ribavirin**-treated mice to HBeAg and HCV NS3 protein. **Ribavirin treatment** of HBeAg-transgenic (HBeAg-Tg) mice induced a dose-dependent down-regulation of T helper (Th)2-mediated antibody production to HBeAg. In **ribavirin**-treated HBeAg-Tg mice anti-HBe IgG1 (positively regulated by Th2 cytokines) decreased simultaneously as both anti-HBe IgG2a (positively regulated by Th1 cytokines) levels and in vitro T-cell IFN-gamma production increased, indicating a change in the Th1/Th2 balance. Thus, the present data suggest that **ribavirin** is not strictly an antiviral compound, but rather it alters the T-cell balance in the immune system.

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Peptide immunogen mimicry of putative E1 glycoprotein-specific epitopes in hepatitis C virus.  
J Virol. 1994 Jul;68(7):4420-6. Erratum in: J Virol 1994 Sep;68(9):6136.  
PMID: 8207814 [PubMed - indexed for MEDLINE]
- ☐ 2: [Shirai M, Okada H, Nishioka M, Akatsuka T, Wychowski C, Houghton R, Pendleton CD, Feinstone SM, Berzofsky JA.](#) Related Articles, Links  
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Production of nonstructural proteins of hepatitis C virus requires a putative viral protease encoded by NS3.  
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- ☐ 4: [Koziel MJ, Dudley D, Afdhal N, Choo QL, Houghton M, Ralston R, Walker BD.](#) Related Articles, Links  
Hepatitis C virus (HCV)-specific cytotoxic T lymphocytes recognize epitopes in the core and envelope proteins of HCV.  
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- ☐ 5: [Ralston R, Thudium K, Berger K, Kuo C, Gervase B, Hall J, Selby M, Kuo G, Houghton M, Choo QL.](#) Related Articles, Links  
Characterization of hepatitis C virus envelope glycoprotein complexes expressed by recombinant vaccinia viruses.  
J Virol. 1993 Nov;67(11):6753-61.  
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Hepatitis C virus-specific CTL responses in the liver of chimpanzees with acute and chronic hepatitis C.  
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PMID: 8389800 [PubMed - indexed for MEDLINE]

- 9: [Grakoui A, McCourt DW, Wychowski C, Feinstone SM, Rice CM.](#) [Related Articles, Links](#)

 Characterization of the hepatitis C virus-encoded serine proteinase: determination of proteinase-dependent polyprotein cleavage sites.


J Virol. 1993 May;67(5):2832-43.  
PMID: 8386278 [PubMed - indexed for MEDLINE]

- 10: [Nishizono A, Hiraga M, Mifune K, Terao H, Fujioka T, Nasu M, Goto T, Misumi J, Moriyama M, Arakawa Y, et al.](#) [Related Articles, Links](#)

 Correlation of serum antibody titers against hepatitis C virus core protein with clinical features by western blot (immunoblot) analysis using a recombinant vaccinia virus expression system.


J Clin Microbiol. 1993 May;31(5):1173-8.  
PMID: 7684748 [PubMed - indexed for MEDLINE]

- 11: [Grakoui A, Wychowski C, Lin C, Feinstone SM, Rice CM.](#) [Related Articles, Links](#)

 Expression and identification of hepatitis C virus polyprotein cleavage products.


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- 12: [Koziel MJ, Dudley D, Wong JT, Dienstag J, Houghton M, Ralston R, Walker BD.](#) [Related Articles, Links](#)

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J Immunol. 1992 Nov 15;149(10):3339-44. Erratum in: J Immunol 1993 Mar 15;150(6):2563.  
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 Expression and characterization of glycoprotein gp35 of hepatitis C virus using recombinant vaccinia virus.


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 Induction of cytotoxic T cells to a cross-reactive epitope in the hepatitis C virus nonstructural RNA polymerase-like protein.


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 Structural proteins of hog cholera virus expressed by vaccinia virus: further characterization and induction of protective immunity.

J Virol. 1991 Feb;65(2):589-97.  
PMID: 1987372 [PubMed - indexed for MEDLINE]

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 Molecular characterization of hog cholera virus.

Arch Virol Suppl. 1991;3:7-18. Review.